

What is claimed is:

1. A lockbolt comprising:
a bolt shaft having a locking portion including a plurality of grooves around a surface of the bolt shaft and including a plurality of peaks at least some having a parallelogram shape and being disposed between the grooves; and
a bolt head on a first end of the bolt shaft.
2. The lockbolt according to claim 1, wherein the plurality of grooves extend in spiral directions helically around the surface of the bolt shaft.
3. The lockbolt according to claim 1, wherein the plurality of grooves include a first group of spiral grooves that respectively extend in a clockwise spiral direction and a second group of spiral grooves that respectively extend in a counterclockwise spiral direction and intersect with said first group of spiral grooves.
4. The lockbolt according to claim 1, wherein the plurality of grooves include a plurality of first grooves extending in a circumferential direction of the bolt shaft and a plurality of second grooves extending in a direction parallel to an axial direction such that the first and second grooves intersect with each other
5. The lockbolt according to claim 1, wherein the parallelogram shape is a diamond parallelogram shape.
6. The lockbolt according to claim 1, wherein the parallelogram shape is a pyramid shape with a four-sided base.
7. The lockbolt according to claim 1, wherein the parallelogram shape is a square or rectangular shape.
8. The lockbolt according to claim 1, further comprising:
a locking collar configured to engage with the plurality of peaks of the locking portion.

9. The lockbolt according to claim 8, wherein when the locking collar is engaged with the locking portion, sealant is uniformly spread out via the plurality of grooves to form a thin surface sealant layer on the locking portion.

10. The lockbolt according to claim 1, wherein at least one groove opens to an outside at an end of the locking portion.

11. The lockbolt according to claim 1, wherein said grooves intersect with each other so that said grooves are interconnected with each other, and
wherein at least one of said grooves extends to and opens at an open groove end at an axial end of said locking portion along an axial direction of the bolt shaft.

12. The lockbolt according to claim 1, wherein said locking portion excludes all annular circumferential grooves.

13. The lockbolt according to claim 1, wherein each of the peaks includes a parallelogram shape.

14. The lockbolt according to claim 1, further comprising:
a break-away portion connected to said locking portion.

15. The lockbolt according to claim 14, wherein said break-away portion includes a constricted neck encircled by a circumferential continuous groove.

16. A lockbolt system comprising:
a bolt shaft having means for engaging a locking collar with the bolt shaft such that the locking collar is securely deformed in a locking manner thereby forcing sealant to uniformly distribute and form a thin surface sealant layer on the bolt shaft; and
a bolt head on a first end of the bolt shaft.

17. The lockbolt system according to claim 16, wherein the means for engaging includes a plurality of grooves around a surface of the bolt shaft and includes a plurality of peaks at least some having a parallelogram shape and being disposed between the grooves.

18. The lockbolt system according to claim 17, wherein the plurality of grooves extend in spiral directions helically around the surface of the bolt shaft.

19. The lockbolt system according to claim 17, wherein the plurality of grooves include a first group of spiral grooves that respectively extend in a clockwise spiral direction and a second group of spiral grooves that respectively extend in a counterclockwise spiral direction and intersect with said first group of spiral grooves.

20. The lockbolt system according to claim 17, wherein the plurality of grooves include a plurality of first grooves extending in a circumferential direction of the bolt shaft and a plurality of second grooves extending in a direction parallel to an axial direction such that the first and second grooves intersect with each other

21. The lockbolt system according to claim 17, wherein the parallelogram shape is a diamond parallelogram shape.

22. The lockbolt system according to claim 17, wherein the parallelogram shape is a pyramid shape with a four-sided base.

23. The lockbolt system according to claim 17, wherein the parallelogram shape is a square or rectangular shape.

24. The lockbolt system according to claim 17, wherein when the locking collar is engaged with the locking portion, sealant is uniformly spread out via the plurality of grooves to form a thin surface sealant layer on the locking portion of the lockbolt.

25. The lockbolt system according to claim 17, wherein at least one groove opens to an outside at an end of the bolt shaft.

26. The lockbolt system according to claim 17, wherein said grooves intersect each other so that said grooves are interconnected with each other, and wherein at least one of said grooves extends to and opens at an open groove end at an axial end of said locking portion

along an axial direction of the bolt shaft.

27. The lockbolt system according to claim 17, wherein said locking portion excludes all annular circumferential grooves.

28. The lockbolt system according to claim 17, wherein each of the peaks includes a parallelogram shape.

29. The lockbolt system according to claim 17, further comprising:
means for breaking off a break-away portion connected to said locking portion.

30. The lockbolt system according to claim 29, wherein the means for breaking includes a constricted neck encircled by a circumferential continuous groove.